

1614



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) Long, et al. Examiner: Unassigned
Serial No.: 10/616,278 Group Art Unit: 1614
Confirmation No: 2088 Docket: 1341-2
Filed: July 9, 2003 Dated: December 24, 2003
For: PREPARATION OF
HYALURONIC ACID FROM
EGGSHELL MEMBRANE

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

*I hereby certify this correspondence is being deposited
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Commissioner for Patents, P.O. Box 1450,
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on December 24, 2003*

Signed: _____

Joyce Peterson

INFORMATION DISCLOSURE STATEMENT

Sir:

In order to fulfill the requirements of candor and good faith set forth in 37 C.F.R.

§1.56, Applicants submit herewith the following Information Disclosure Statement in
accordance with the provisions of 37 C.F.R. §1.97 and §1.98.

UNITED STATES PATENTS

<u>PATENTEE</u>	<u>PATENT NO.</u>	<u>ISSUE DATE</u>
Neuhauser	3,194,732	July 13, 1965
Balazs	4,141,973	February 27, 1979
Bracke et al.	4,517,295	May 14, 1985
Balazs et al.	4,713,448	December 15, 1987
Sakurai et al.	4,716,224	December 29, 1987

Nimrod et al.	4,784,990	November 15, 1988
Cullis-Hill	4,879,375	November 7, 1989
Diot et al.	4,992,264	February 12, 1991
Balazs et al.	5,099,013	March 24, 1992
Noel	5,141,964	August 25, 1992
della Valle et al.	5,166,331	November 24, 1992
Brown et al.	5,316,926	May 31, 1994
Ellwood et al.	5,411,874	May 2, 1995
Kakoki et al.	5,415,875	May 16, 1995
Abad	5,538,740	July 23, 1996
Yamaguchi et al.	5,460,832	October 24, 1995
Romeo et al.	5,559,104	September 24, 1996
Callegaro et al.	5,646,129	July 8, 1997
Mälson et al.	5,783,691	July 21, 1998
della Valle et al.	5,925,626	July 20, 1999
Lezdey et al.	5,869,063	February 9, 1999
Moy	5,928,659	July 27, 1999
Burns et al.	6,030,958	February 29, 2000
Mohammadi	6,217,913 B1	April 17, 2001
Falk et al.	6,218,373 B1	April 17, 2001
Wolfenbarger, Jr.	6,337,389 B1	January 8, 2002
Pillai et al.	6,399,083 B1	June 4, 2002

NON-PATENT PUBLICATIONS

1. Nakano T., Ikawa NI, Ozimek., "Chemical composition of chicken eggshell and shell membranes," *Poult Sci.* 2003, 82(3):510-4 [Abstract].
2. Dupoirieux L., Pourquier D., Picot MC, Neves M., "Comparative study of three different membranes for guided bone regeneration of rat cranial defects," *Int J Oral Maxillofac Surg* 2001, 30(1):58-62 [Abstract].
3. Hincke MT, Gautron J., Panheleux M., Garcia-Ruiz J., McKee MD, Nys Y., "Identification and localization of lysozyme as a component of eggshell membranes and eggshell matrix," *Matrix Biol* 2000, 19(5):443-53 [Abstract].
4. Dupoirieux L., Neves M., Pourquier D., "Comparison of pericranium and eggshell as space fillers used in combination with guided bone regeneration: an experimental study," *J Oral Maxillofac Surg* 2000, 58(1):40-6 [Abstract].
5. Arias JL, Nakamura O, Fernandez MS, Wu JJ, Knigge P, Eyre DR, Caplan AI, "Role of type X collagen on experimental mineralization of eggshell membranes," *Connect Tissue Res* 1997, 36(1):21-33.
6. Arias JL, Fernandez MS, Dennis JE, Caplan AI, "Collagens of the chicken eggshell membrane," *Connect Tissue Res* 1991, 26(1-2):37-45 [Abstract].
7. Starcher BC, King GS, "The presence of desmosine and isodesmosine in eggshell membrane protein," *Connect Tissue Res* 1980, 8(1):53-5 [Abstract].
8. Osuji CI, "Acid glycosaminoglycan of eggshell membranes," *Biochim Biophys Acta* 1971, 244(2):481-3.
9. Gautron J, Hincke MT, Panheleux M, Garcia-Ruiz JM, Boldicke T, Nys Y, "Ovotransferrin is a matrix protein of the hen eggshell membranes and basal calcified layer," *Connect Tissue Res* 2001, 42(4):255-67 [Abstract].
10. Akagawa M, Wako Y, Suyama K, "Lysyl oxidase coupled with catalase in egg shell membrane," *Biochim Biophys Acta* 1999, 1434(1):151-60 [Abstract].
11. Suyama K, Fukazawa Y, Umetsu Y, "A new biomaterial, hen egg shell membrane, to eliminate heavy metal ion from their dilute waste solution," *Appl Biochem Biotechnol* 1994, 45-46:871-9[Abstract].
12. Arias JL, Fernandez MS, Dennis JE, Caplan AL, "The fabrication and collagenous substructure of the eggshell membrane in the isthmus of the hen oviduct," *Matrix* 1991, 11(5):313-20[Abstract].
13. U.S. Department of Agriculture, Avian Physiology Laboratory, Beltsville, Maryland 20705, "Levels of calcium and soluble collagen in turkey egg shell membranes," *Comp Biochem Physiol A* 1988, 90(3):421-4[Abstract].

14. Leach RM Jr, Rucker RB, Van Dyke GP, "Egg shell membrane protein: a nonelastin desmosine/isodesmosine-containing protein," *Arch Biochem Biophys* 1981, 207(2):353-9[Abstract].
15. Crombie G, Snider R, Faris B, Franzblau C, "Lysine-derived cross-links in the egg shell membrane," *Biochim Biophys Acta* 1981, 640(1):365-7[Abstract].
16. Harris ED, Blount JE, Leach RM Jr., "Localization of lysyl oxidase in hen oviduct: implications in egg shell membrane formation and composition," *Science* 1980, 208(4439):55-6[Abstract].
17. Stevenson IL, "The removal of egg shell membranes by enzyme treatment to facilitate the study of shell microstructure," *Poult Sci* 1980, 59(8):1959-60[Abstract].
18. Picard J, Paul-Gardais A, Vedel M., "[Sulfated glycoproteins from egg shell membranes and hen oviduct. Isolation and characterization of sulfated glycopeptides (author's transl)]," *Biochim Biophys Acta* 1973, 320(2):427-41[Abstract].
19. Robinson DS, King NR, "Mucopolysaccharides of an avian egg shell membrane," *JR Microsc Soc* 1968, 88(1):13-22[Abstract].
20. Powrie William, Nakai S., "The Chemistry of eggs and egg products," *Egg Science and Technology* 1990, 97-139.
21. Wu Tzong-Ming, Rodriguez Juan Pablo, Fink David, Carrino David, Blackwell John, Caplan Arnold, Heuer Arthur, "Crystallization Studies on Avian Eggshell Membranes: Implications for the Molecular Factors Controlling Eggshell Formation," *Matrix Biology* 1995, 14:507-513.
22. Hall David, "The Colorimetric Estimation of Uronic Acid," *The Methodology of Connective Tissue Research* 1976, 253-256.
23. Wong Mitchell, Hendrix Mary J.C., Mark Klaus von der, Little Charles, Stern Robert, "Collagen in the Egg Shell Membrane of the Hen," *Developmental Biology* 1984 104:8-36.
24. Gautron, Bain M., Solomon S, NYS Y., "Soluble matrix of hen's eggshell extracts changes *in vitro* the rate of calcium carbonate precipitation and crystal morphology," *British Poultry Science* 1996 37, 853-866.
25. Tomihata Kenji, Ikada Yoshito, "Crosslinking of hyaluronic acid with water-soluble carbodiimide," *J Biomed Mater Res*, 1997, 37, 243-251.
26. Carrino David, Dennis James, Wu Tzong-Ming, Arias Jose, Fernandez Maria, Rodriguez Juan, Fink David, Heuer Arthur, Caplan Arnold, "The Avian Eggshell Extracellular Matrix as a Model for Biomineralization," *Connective Tissue Research*, 1996, 35(1-4), 325-329.

27. Hincke M.T., Tsang C.P.W., Courtney M, Hill V, Narbaitz R., "Purification and Immunochemistry of a Soluble Matrix Protein of the Chicken Eggshell," *Calcif Tissue Int*, 1995, 56:578-583.

The above-referenced documents are listed on PTO Form 1449. We have enclosed the cited documents to facilitate reference to them.

Applicants are not aware of any other references to be identified at this time. If the Examiner has any questions or comments relating to the present application, he or she is respectfully invited to contact Applicants' attorney at the telephone number set forth below.

Respectfully submitted,



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FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE (Rev. 12-32) PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	ATTY. DOCKET NO. 1341-2	SERIAL NO. 10/616,278
	APPLICANT Long, et al.	CONFIRMATION NO. 2088
	FILING DATE July 9, 2003	GROUP 1614

U.S. PATENT PUBLICATIONS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
		4,992,264	02/12/91	Diot et al.			
		5,099,013	03/24/92	Balazs et al.			
		5,141,964	08/25/92	Noel			
		5,166,331	11/24/92	Della Valle et al.			
		5,316,926	05/31/94	Brown et al.			
		5,411,874	05/02/95	Ellwood et al.			

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

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		5,559,104	09/24/96	Romeo et al.			
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		6,030,958	02/29/00	Burns et al.			
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		6,218,373 B1	04/17/01	Falk et al.			

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		6,337,389 B1	01/08/02	Wolfenbarger, Jr.			
		6,399,083 B1	06/04/02	Pillai et al.			

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			Osuoji CI, "Acid glycosaminoglycan of eggshell membranes," <i>Biochim Biophys Acta</i> 1971, 244(2):481-3.

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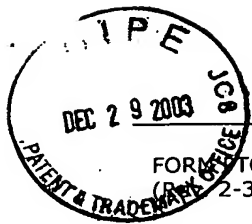
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			Gautron J, Hincke MT, Panheleux M, Garcia-Ruiz JM, Boldicke T, Nys Y, "Ovotransferrin is a matrix protein of the hen eggshell membranes and basal calcified layer," <i>Connect Tissue Res</i> 2001, 42(4):255-67 [Abstract].
			Akagawa M, Wako Y, Suyama K, "Lysyl oxidase coupled with catalase in egg shell membrane," <i>Biochim Biophys Acta</i> 1999, 1434(1):151-60 [Abstract].
			Suyama K, Fukazawa Y, Umetsu Y, "A new biomaterial, hen egg shell membrane, to eliminate heavy metal ion from their dilute waste solution," <i>Appl Biochem Biotechnol</i> 1994, 45-46:871-9[Abstract].

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			U.S. Department of Agriculture, Avian Physiology Laboratory, Beltsville, Maryland 20705, "Levels of calcium and soluble collagen in turkey egg shell membranes," <i>Comp Biochem Physiol A</i> 1988, 90(3):421-4[Abstract].
			Leach RM Jr, Rucker RB, Van Dyke GP, "Egg shell membrane protein: a nonelastin desmosine/isodesmosine-containing protein," <i>Arch Biochem Biophys</i> 1981, 207(2):353-9[Abstract].

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			Robinson DS, King NR, "Mucopolysaccharides of an avian egg shell membrane," <i>JR Microsc Soc</i> 1968, 88(1):13-22[Abstract].
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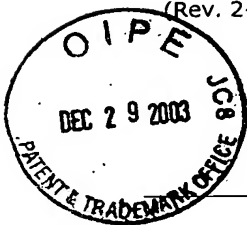
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

			Gautron, Bain M., Solomon S, NYS Y., "Soluble matrix of hen's eggshell extracts changes <i>in vitro</i> the rate of calcium carbonate precipitation and crystal morphology," <i>British Poultry Science</i> 1996 37, 853-866.
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U.S. PATENT PUBLICATIONS

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FOREIGN PATENT DOCUMENTS

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							YES	NO

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			Hincke M.T., Tsang C.P.W., Courtney M, Hill V, Narbaitz R., "Purification and Immunochemistry of a Soluble Matrix Protein of the Chicken Eggshell," <i>Calcif Tissue Int</i> , 1995, 56:578-583.

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